The Excavating Engineer

Vol. 17 JULY 1923 No. 7

$4,500,000 Water Supply and Irrigation Project Nearing Completion Near Wichita Falls, Texas

Construction of Storage and Diversion Dams by Gasoline Draglines and Revolving Shovels, Hydraulic Dredge, Tractors and Teams on the Big Wichita River

THE State of Texas is separated from Oklahoma on the north by the Red River, one of the great tributaries of the Mississippi. The City of Wichita Falls is situated on the banks of the Big Wichita River which flows into the Red River about 20 miles further down stream. It is on this river that the Wichita County Water Improvement District No. 1 is rapidly completing a project, involving the expenditure of $4,500,000, which will not only furnish the City of Wichita Falls with its water supply but will irrigate 110,000 acres of agricultural land in the valley of the Wichita River.

Like so many water courses in arid and semi-arid regions, this river is a flashy stream. In certain seasons the river bed is dry as a bone with only a small underground flow through the sand, whereas at flood periods the channel carries a very large volume of water. The average rainfall, which is 27 inches, would be sufficient for agricultural purposes if it were properly distributed, but because of the above conditions there are long periods of drouth every year which are fatal to successful cultivation. Therefore the project.

The Project

This in general consists of the construction of a large hydraulic-fill storage dam with a puddle fill and sheet steel pile cut-off about 50 miles west of the city on the Big Wichita River in Baylor County, a smaller diversion dam in Archer County 15 miles down stream from the storage dam, and a system of about 64 miles of main and lateral canals near Wichita Falls.

The work is under the direction of the Morgan Engineering Company of Memphis with L. L. Hildinger, President, as Consulting Engineer. R. A. Thompson is Chief Engineer in charge. The general contract is in the competent hands of the well-known drainage contractors of Dallas, the W. E. Callahan Construction Company, who in turn have sublet portions of the work to Callahan & Walker of Omaha, Maney Brothers Company of Omaha, the Puget Sound Bridge and Dredging Company of Seattle and some twelve others.

The actual dam construction contains some unusual construction features, but from the excavation point of view, the interesting feature of the work is the operation of three gasoline and oil revolving shovels which will be described herein.

W. E. Callahan's 30-B Bucyrus gasoline shovel cutting a road from Maybelle, Texas, to the storage dam. The shovel encountered steep grades and very heavy material on the last part of this road.

The Storage Dam

The storage dam is a hydraulic-fill earth structure 7,500 feet long with a height varying from 30 to 100 feet. The base will be 563 feet, the crown width 24 feet and slopes of 3 to 1 on the upstream side and 2 to 1 on the downstream. The upstream slope will be covered with rip-rap laid to a depth of 18 inches on an 8-inch gravel base. The dam contains about 1,500,000 cubic yards of earth.

The storage reservoir behind the dam is 13 miles long and 3½ miles wide, and at the spillway level has a capacity of 500,000 acre-feet and covers an area of 20,000 acres. 3,000 feet of the embankment was constructed by a 20-inch electric hydraulic dredge by the Puget Sound Bridge and Dredging Company, which has put all but about 100,000 cubic yards into the dam. This dredge is driven by 2,000 H. P. motors, the cur-

The Same Shovel at Work on the Service Spillway

Bucyrus 30-B Gasoline Shovel Cutting the Spillway Outlet

W. E. Callahan's 30-B Bucyrus Oil Shovel Loading Rock on the Spillway in April, 1923

Spillway and River Embankment

Construction of Diversion Dam

rent being delivered over a 50-mile power line. The work of this dredge has just been completed. The balance of the fill is team work, using elevating graders and wagons.

Gasoline Shovel and Dragline Operation

As stated, the contractors used three revolving shovels and one dragline on the project. The shovels were all 30-B Bucyrus rope-thrust machines, two owned by W. E. Callahan Construction Company and one by Callahan & Walker.

The first on the job was driven by a single 55 H. P. gasoline engine and carried a 1-cubic-yard dipper. Its thrusting force is derived from a patented rope drive, consisting of a small drum mounted on the same shaft with the rack pinions. This drum is suspended under the boom and carries two ropes wrapped in opposite directions. These ropes are driven from drums on the shovel, and through them all the motions of the dipper are accomplished. It is an extremely simple and positive design.

This shovel was first used for excavating a roadway to the dam site from the shipping point, Mabelle, a distance of about 8 miles. The last cut was 2000 feet long on a 6% grade. The material consisted of joint clay, cap rock and boulders of all sizes, some nearly as large as the shovel itself. It was then used for the excavation of the large conduits under the sforage dam and to complete the excavation for the service spillway, both of which were in joint clay and shale and amounted to about 70,000 yards. The contractors report that this shovel has given most satisfactory service and had ample power, which was demonstrated in digging the hard material above mentioned.

An excellent opportunity was offered to compare this shovel with a steam shovel, as it was working alongside of a ¾-yard steam shovel on the conduit excavation and handled about 30% more material.

On the spillway excavation this shovel was equipped with a dragline boom and a 1-cubic-yard bucket. There are six of the conduits above mentioned, four of these being temporary, to provide for the discharge of flood water during the construction, the other two will control the discharge of water from the storage dam to the diversion dam. The spillway is a circular concrete structure 565 feet in length.

The Diversion Dam

The diversion dam is 4,200 feet long with a maximum height of 55 feet above the river bed. At one end is a concrete spillway 310 feet long. The earth section of this dam will contain 550,000 cubic yards. The upstream slopes are 3 to 1 and 2 to 1 and the downstream slope 2 to 1. The upstream slope will be paved with a 12-inch layer of rip-rap on a 6-inch gravel blanket. The downstream face across the river channel will also have rip-rap. Behind this dam is a reservoir 6 miles long and about one mile wide, with a capacity of 45,000 acre feet.

Work on the diversion dam began in January, 1922. The cut-off trench was excavated 10 feet upstream from the center line of the dam by a dragline excavator, and material deposited on both toes of the dam. In this trench a row of Carnegie steel sheet piling, weighing 35 pounds per square foot, was driven into the shale. The trench was then pumped full of water and material from a borrow pit was loaded into wagons by a Best caterpillar tractor and an elevating grader, two wagons to a tractor. The material was dumped at the downstream toe of the dam and was moved into the trench with a dragline excavator.

The method was to dump the material near the edge of the trench, which allowed the heavier pieces to deposit along the sides and the very fine

Conduit Excavation on Storage Dam Showing a Bucyrus 30-B Oil Shovel in the Foreground and an Osgood 18 Steam Shovel in the Background

particles in the center and along each side of the piling. In doing this the dragline traveled on the material which it had cast at the toe of the dam, which material was leveled to 4 feet in height.

The dragline placed about 100,000 cubic yards into the embankment after it had been dumped at the toes by wagons, and thereafter the remainder of the dam is being built by dump wagons with material taken from borrow pits above and below the dam. This is done in three-feet lifts, each lift being separated into sections about 300 feet long by small levees. These sections are flooded to a depth of one foot. This saturates the material thoroughly in from three to four days except where the dragline traveled, where four to eight days were required. After saturation is complete the pool is drained and allowed to dry before the next lift is placed. Sprinkling will probably be necessary when building the top of the dam.

In order to secure a good foundation, the spillway has been placed into the hill at the south end

Best Tractors Hauling Material to the Fill in La Plante-Choate 5-yard Wagons

Callahan & Walker's 30-B Bucyrus Oil Shovel Loading Wagons

Looking Downstream from the Top of Service Spillway Site, Showing W. E. Callahan's 30-B Gasoline Shovel in Operation

Showing the Heavy Character of the Material Handled

Views of the Construction of the Diversion Dam at Dundee, Texas

of the dam. Channels are also being excavated approaching the spillway. These are also being cut through the side of the hill and below the spillway in order to lead the water back into the river channel. Some of the excavated material is being placed in the river channel leaving a 75-foot channel for the river. Some of it goes into the toes of the dam on the south of the channel. The surplus material from the excavation of the spillway will be hauled across the river on a trestle and placed in the earth section of the embankment north of the river channel.

Oil Shovel Operation

As stated, three Bucyrus 30-B rope-thrust revolving shovels are being used on the diversion dam, one of these is the gasoline shovel which completed its work on the storage dam in January. The other two are similar to the first shovel except that they are driven by oil engines instead of gasoline. One is owned by W. E. Callahan and one by Callahan & Walker.

This type of equipment was adopted because the water from the Wichita River was unsuitable for boiler requirements due to the presence of alkali and other foreign matter. Both shovels are working in shale and joint clay a great portion of which has to be blasted. They are doing this work in a very satisfactory manner and have shown an abundance of power. During the month of January one of these shovels loaded 18,623 cubic yards into wagons which were hauled a distance of 1000 feet. This is considered a very good month's operation as the material would all have been loose or solid rock had it been classified material. During March both shovels handled 31,000 yards in the same class of material, or an hourly output per shovel of 70½ yards bank measure.

Callahan & Walker's oil shovel is loading wagons on their portion of the work on the north side of the river. These shovels have been used for the more difficult excavation on the spillway, approach channels and the borrow pits, where the teams and dragline could not be used to advantage.

Distribution System

The distribution system will consist of three main canals. The 24-mile South Side Canal begins at the south end of the diversion dam and follows the south side of the Wichita River Valley to just below Wichita Falls. This canal will irrigate 30,000 acres of land and will feed into Lake Wichita, the present source of water supply for Wichita Falls. The North Side Canal branches from the South Side Canal 15 miles below the diversion dam, crosses the valley and irrigates 35,000 acres of land on the north side. Another channel branches from the South Side Canal and irrigates 45,000 acres to the southeast of the city.

These canals vary in width from an 8-foot to a 32-foot bottom. This work amounts to about 2,500,000 cubic yards of excavation, all of which is being done by subcontractors with elevating graders, plows and fresnos. Work on the laterals and the North Canal is held up, pending a bond issue and ratification of the contract.

Use of Tractors

It is of interest to note the extensive use of tractors on this contract, which was necessary in order to complete the work in the allotted time. Callahan & Walker and Maney Brothers are using five Best "Sixty" Tractors as a part of their equipment.

Another View of the Bucyrus 30-B Oil Shovel Digging Spillway Outlet

Subcontractors

As stated before, the W. E. Callahan Construction Company of Dallas have the general contract for the work under the general supervision of E. S. Heyser, Vice-President. Among the subcontractors are the following: Puget Sound Bridge and Dredging Company, Callahan & Walker Construction Company, Maney Brothers & Company, Murphy & Shackelford, C. H. McClellan, Pat O'Connor, A. E. Hanna, John L. King, J. H. Murphy and the Pace-Shelby Construction Company.

All of these have been engaged on the earth work with the exception of the three last mentioned. John L. King has the contract for the rip-rap and gravel blankets, J. H. Murphy has driven the sheet steel piling and Pace-Shelby is handling the concrete in canal structures. The mass concrete at both dams is placed by W. E. Callahan Construction Company, the general contractor.

R. A. Thompson is Chief Engineer for the District, and O. N. Floyd is Assistant Chief Engineer. The Morgan Engineering Company is Consulting Engineer.

General View of Kambove Mine Buildings at Elizabethville with Concentrator to Left

Three Bucyrus Railroad-Type Shovels in Operation on Successive Benches in the Kambove Mine

Two Views of the Operations of the Union Miniere du Haut Katanga, Belgian Congo

Copper Mining in the Belgian Congo

Description of the Operations of the Union Miniere du Haut Katanga, with Special Reference to Steam Shovel Operation

THE Union Miniere du Haut Katanga was founded in 1906 for the purpose of developing and exploiting mineral deposits, principally copper and tin found in a zone of about 30,000 square kilometers (about 11,580 square miles) in the province of Katanga in the Belgian Congo. The mine headquarters are located at Elizabethville, Katanga, and the offices of administration at 3 Rue de la Chancellerie, Brussels, Belgium. The working capital of the company is 76,000,000 francs. The Company has outstanding 60,000,000 francs in bonds. Besides it can issue in proportion to its needs 100,000,000 francs of preferred stock and 150,000 francs of bonds.

The concessions of this company are situated in the central part of the province of Katanga (district of Haut-Luapula). The region consisting of a plateau, the mean altitude of which is 1,000 meters, is favored with a healthy and agreeable climate.

The mineral zone is served by the Katanga Railroad which enters Rhodesia by the Lualaba River; at the frontier it connects with the Rhodesian Railroad, which in turn connects with the South African Railroad.

The tonnage of known minerals on December 31, 1921, was as follows:

Southeast Part

	Tons	% Copper	Total Copper Tons
Smelting ore.....	903,000	17.02	154,700
Ore to concentrator.....	9,891,000	8.00	784,900
Ore treated by wet process	23,358,000	5.97	1,392,400
Sulphurous ore.....	7,280,000	2.72	201,310
Mixed ore.....	4,916,000	8.00	279,500
Total at end of 1921.....	46,348,000		2,812,810
Total at end of 1920.....	32,300,000		1,869,000

Southwest Part

The estimate for the three more important deposits were as follows:

	Tons	Total Copper Tons
Ore bearing 15% copper and more.....	1,736,000	286,000
Ore bearing less than 15% copper.....	9,800,000	587,247
	11,536,000	873,247

Production of Copper

The smelter where the rich ores (15% copper) are treated is situated at Elizabethville. The low-grade ores are treated at the Panda concentrator which has a daily capacity of 4000 tons. The concentrates are then sent to the smelter.

The production of copper in 1922 was 43,332 tons.

The Star of the Congo Mine

About eight miles from the smelters is The Star of the Congo, the first mine operated by the Union Miniere. Two 14-B Bucyrus shovels, the first owned by the Company, played an important part in the stripping of this mine at the beginning of operations in 1911. Owing to the local conditions, native labor is now used for the extraction and sorting of the ore. Some of the ore is put through a small washing plant to get the proper grade, as nothing under fifteen per cent is sent to the smelters. The lower grades of ore are stored in stock piles to be used later when the right facilities are installed and the transportation costs are lower.

Governor General Maurice Lippens of the Belgian Congo during his visit to the mine in the summer of 1921. He is shown standing on the dipper of a Bucyrus shovel.

Kambove Mine

The next and largest mine to be developed is the Kambove Mine, operating during 1920 and 1921 four Bucyrus shovels continuously and sometimes six when occasion demands. All of these have worked at the Kambove Mine, but as a rule four is the number operated at one time. This number was reduced to two in 1922.

Kambove Mine is located about one hundred miles north of Elizabethville and the smelters. Here the first operation was to drive a tunnel through the length of the main ore body parallel to the two ore bodies. The mouth of the tunnel is at the bottom of the hill and about forty-five feet above the railroad loading track, which gives ample fall for a gravity loading bench. Over this

Looking Northwest. The top shovel is working on B level, the second on C and the third on D. The cut in the center on D level shows what remains of the original tunnel and also main ore body.

A, B, C and D levels looking East with a shovel on each of the three last-mentioned levels. The sub-level in the center of D level shows what originally was the tunnel with its tracks still intact. The natives are shown working in the high-grade ore.

Looking Southwest showing a shovel on B level at work in leaching ore and one on C level in concentrating ore.

A shovel on D level sorting plant ore. The natives to the left are taking out high-grade ore from the main ore body.

General Views of Stripping Operations at Kambove

tunnel at the distance of two hundred feet apart, shafts were sunk along the length of the tunnel. These shafts serve as storage bins for the high-grade ore.

From these bins the ore is conveyed to the loading bench by small cars, each car being operated by one native. The tunnel is double tracked and has a grade of one half of one per cent so that the cars run by gravity to the loading bench. As the cars are very light the native can easily push the empty back to the storage bin. It was possible to run out one thousand tons of high-grade ore of fifteen to thirty per cent in one day in this way.

There are two distinct ore bodies, the main ore body is very wide and runs very high Malachite. There is a yellow dividing line band separating the two ore bodies, which in places is highly mineralized but very soft. The second ore body is more broken up and irregular, and in places the ore is very high grade. This is where the shovels played an important part in the development of the Kambove Mine.

The ore veins run east and west, dipping from north to south. The main ore body is on the south side. On the foot wall the ore is found in very irregular patches, and in stripping a shovel may at any time run into one of these patches. This ore is taken care of at the mechanical sorting plant. It has large storage bins which are built on the natural slope of the hill with swinging tracks, which are worked the same as an ordinary dump. This takes care of one or more shovels, should a patch of ore be encountered at the same time. It insures also the sorting plant of plenty of ore should all shovels be out of ore at the same time.

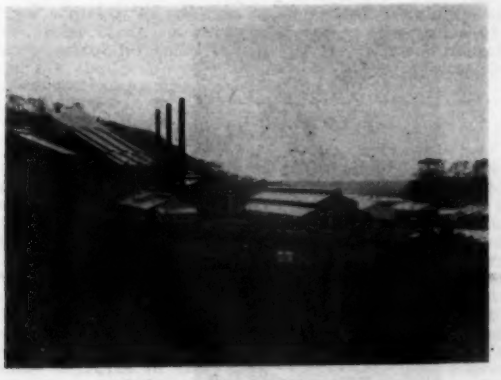
The Kambove Mine is worked in ten-meter or thirty-foot benches with a grade of one half of one per cent, sloping to the bottom of the hill. This causes all the water to run to the ravine in the wet season, for it is a common occurrence to have one inch of rainfall in half an hour.

"A" level is the top bench and averages from twenty to sixty feet in height. This is where the

Bucyrus 14-B Revolving Shovel in Operation in The Star of the Congo Mine

Loading Ore Into Cars

Sorting Plant



View of the Plant at Elizabethville

General Views of the Operations

Natives with a Python Snake Killed Near Kambove

Wild Leopard Encountered Near Kambove

African Wart Hog — The African Pork

First Motorcycle to Arrive in Native Town of Bunkeya, Sixty Miles from Kambove

Typical African Quarters

Typical Scenes around Kambove in the Belgian Congo

88-C shovel has been kept. This shovel has given very good results.

The standard gauge for the railways of Africa is three feet six inches. Consequently, all the shovels owned by the Union Miniere have adjustable trucks with the wheels keyed on the axle which makes them adjustable to any gauge necessary. All the shovels, with the exception of the 88-C, which is too heavy for the narrow gauge, have been adjusted to the three-feet six-inch gauge. This allows them to be shifted about the mine on the loading tracks.

Until the time the concentrator had been completed, the lower grade ores encountered by the shovels were placed on dumps. The concentrator is located at La Panda, which is twenty-five miles nearer Elizabethville than Kambove and is between the two.

A 68-C Bucyrus Shovel Stripping on B Level

The first thing a shovel man learns to do is to know the different classes of ore on sight, as frequently there are several classes of ore in one face. Some of this ore may be sent to the concentrator while some of it may be too high grade and some too light for concentration. This light ore is placed on low-grade dumps to be treated at some future time when plants will be built to treat it. At the present time there is a small experimental leaching plant at La Panda.

It may readily be seen that it is an important duty of all concerned to know the right classification of minerals, as a few tons wrongly classified might result in considerable losses for the Company.

The drilling for blasting is done by Keystone drills and jumper drills. The jumper drills are worked by the natives. Usually two rows of holes are drilled five feet below the level of the shovel. On account of the high cost of explosives it was found that cost could be lowered considerably by only blasting one day ahead of the shovel, thus allowing the man doing the blasting to study the stratum in the face in front of the shovel. The outside hole is always fired first, thus taking the load off of the inside hole and allowing it to do better work. The jumper drills are used where shorter holes are needed, although some holes are drilled to the depth of twenty-five feet by hand.

Likasi Mine

This mine consists of a deposit existing in the form of a hill. Two steam shovels were in operation here in 1922 — one working in ore on the lower bench, the other loading the rich ore into stock piles.

Luushia Mine

One steam shovel has been in operation in this mine during 1921 for stripping ore.

Mine Being Developed at Ruashi

The Union Miniere has discovered an important deposit of ore at Ruashi, near to the Star Mine. This deposit is situated in a flat and marshy district covered by an overburden of about twelve meters in depth.

Steam shovels will be used for stripping this property.

Steam Shovel Equipment

The Company is using in its mines six Bucyrus steam shovels; one 14-B revolving shovel with a ¾-yard dipper, two 40-B railroad type shovels with 1½-yard dippers, four 68-C railroad type shovels with 2½-yard dippers and one 88-C railroad type shovel with a 3-yard dipper.

We are indebted for the above information to the management of the Company in Brussels and to Frank Hocking, steam shovel foreman.

Bucyrus Company Issues New Placer Dredge Catalogue

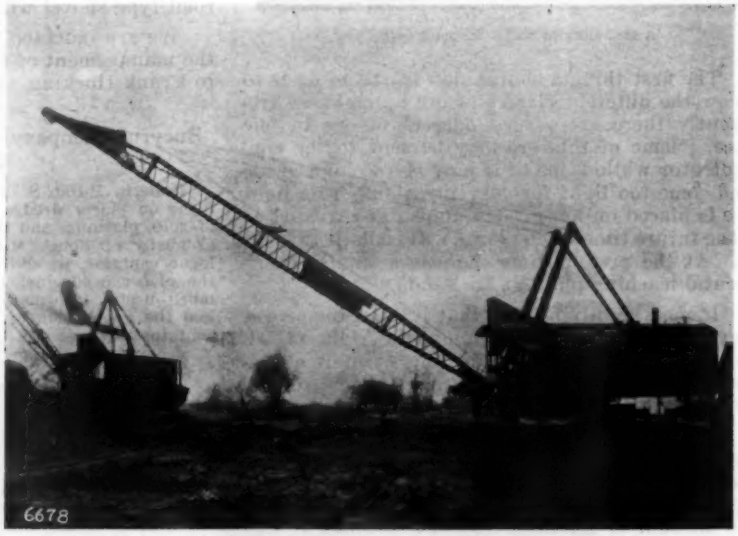
Bulletin P-1002-S is the designation of a new catalogue on placer dredge machinery for alluvial deposits of gold, platinum and tin just published by the Bucyrus Company of South Milwaukee, Wisconsin. This catalogue contains, in addition to a detailed description of the placer dredge machinery offered by that company, much useful information in regard to alluvial mining and the application of dredging machinery thereto. It contains 24 pages and is highly illustrated.

Juniata Specifications

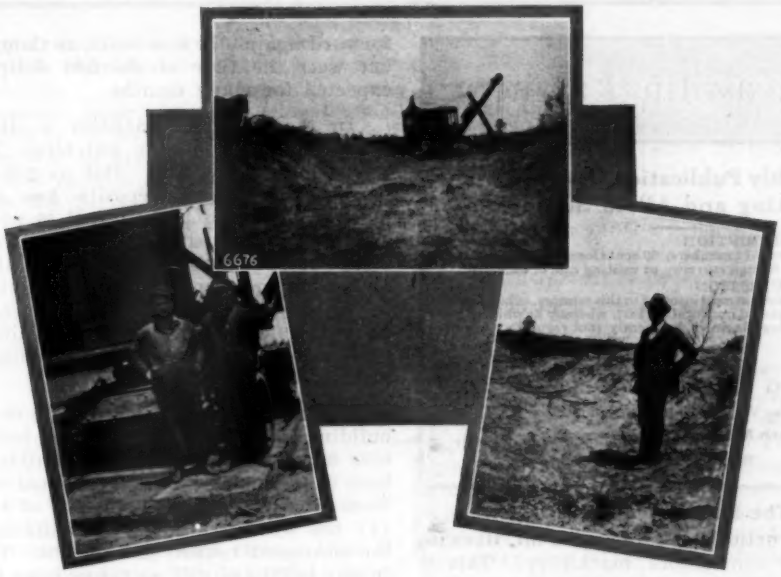
Some try to get rich by keeping out of the concrete, if the inspector isn't watching, something they are paid to put in. We make the mix richer by putting in a liberal allowance of the most expensive and rarest thing in the world—a thing the specifications never call for and the inspector doesn't always see going in. This improves the quality of the cement no matter how high its test; sharpens the sand; makes concrete more uniform; fills the voids; reinforces better than steel; makes the concrete live longer and wear better; helps it to stand up under the heaviest traffic; makes it less liable to crack under extremes of heat and cold; and finally reduces subsequent maintenance cost of the completed road to the very minimum. What is this? GOOD INTENT.

—*Juniata News*

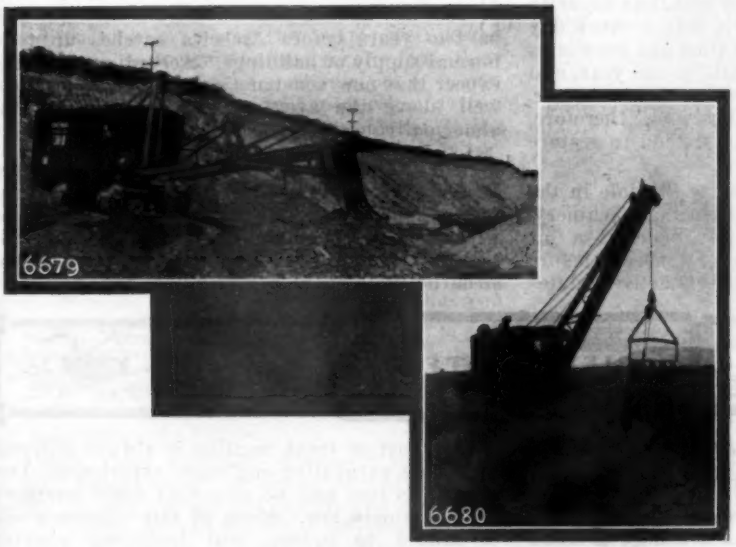
Sherman & Rhoades of Smyrna, Delaware, are at work on a contract for 3¼ miles of concrete road through Smyrna. Our photographs show their outfit in action. This consists of Fordson Tractors and Western Wheeled Scrapers for light grading and a Bucyrus 20-B for the heavier work. Messrs. Sherman and Rhoades are personally supervising the work.



T. A. Gillespie Co. has a contract with the City of Detroit for a 3 barrel sewer job. The barrels are 15' 7" x 17' 6" and the work involves about 400,000 yards. The material is loaded into 4-yard cars by two Bucyrus Class-20 draglines, and is used for back fill, excess being wasted.



At Millville, New Jersey, Bentley & Morison of Elizabeth, New Jersey, have a contract for putting in a railroad siding and extending it to a sand and gravel pit, a distance of about four miles, involving about 30,000 cubic yards of excavation. They are using Stryker & Stryker's 20-B Bucyrus, which we show above finishing up a light cut. On the right is T. C. White, Superintendent, and to the left is the shovel crew, Ray De Graw, the lever artist, and to his left is Jack Riddell, the steam maker.



Above is a view of the Bucyrus 30-B horizontal thrust coal loader owned by the Pittsburg Midway Coal Company at Pittsburg, Kansas. Below one of the United States Reclamation Service's Bucyrus 30-B gasoline draglines at work on the Rio Grande Project near El Paso, Texas. When this picture was taken this machine had travelled from ditch to ditch on the project, a distance of over 100 miles. It is mounted on caterpillar traction.

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THE
EXCAVATING ENGINEER PUBLISHING CO.
Bradlee Van Brunt, Manager and Editor
South Milwaukee, Wisconsin
Printed in the U. S. A.

The Business Outlook

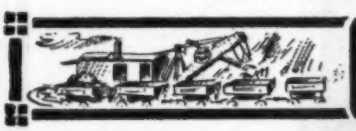
New construction has fallen off a bit, likewise the orders for contractors' machinery. This is a healthy sign. At first glance it might seem that this curtailment in construction work is undesirable; but experience shows that if too much is attempted in any one year, a crisis is apt to occur, followed by work at about fifty per cent of capacity during the depression which follows. It is far better to work at slightly less than capacity on the average, year after year, than to work day and night shifts, paying extra time and premiums for prompt delivery of materials in one year, and then violently reverse the process the next year. The present softening in business, therefore, instead of causing worry, should tend to restore confidence.

At present, long deliveries are the rule in the case of the higher grades of excavating machinery. The present lull should merely make it a bit easier to supply the contractor's needs, before an increasing volume of orders sets delivery dates forward again. It now looks as though the present were the time of shortest deliveries to be expected for many months.

In the inflation statistics a situation has arrived which will bear watching. Bank loans are rapidly increasing. But as yet the spread between loans and deposits has not become marked, as it did in 1920. It is possible, however, that the business public will spend their bank balances rather freely during 1923 without giving proper attention to the reduction of debts, in which case the consequent spread between loans and deposits would be a warning of a prospective slump. At present, loanable funds are neither scarce nor overplentiful.

No one should expect a drastic decline in the building industry, in spite of the fact that business moves in cycles and that building has just been experiencing an unprecedented boom. That boom was due to a combination of two factors: (1) the war curtailment of building; and (2) the movement toward the suburbs. The shortage in city buildings will sooner or later be made up. But the demand for suburban building is still in its infancy. Hence those who expect a sudden cessation of building activity, and those who expect it to continue at its present high levels, are alike wrong. A readjustment will come, but the growing demand for suburban dwellings will prevent any sudden decline. On the whole, it may be two years before America catches up to a normal supply of buildings. Accordingly, we can expect that new construction during 1923 will be well above the average, although not at the abnormal rate of the last few months.

The present extreme shortage of labor should be relatively short-lived. It is chiefly due to the recent spurt in industrial production, combined with the unusual boom in new building. By this time next year, we can look for an easier labor situation with reduced wages.



· FIELD NOTES ·

Points on Truck Maintenance

By P. L. Sniffin

One of the very first requirements of successful motor truck operation in the excavating engineer's use, is the forming of a systematic policy of maintaining the vehicles. By maintenance is meant the care which the trucks receive, the way they are driven and the attention that is devoted to such subjects as upkeep, inspection, repair, overhauling, etc.

The cost of truck hauling is always different in various excavating engineers' experiences. One company's cost may be very high while another's is surprisingly low. Much of this difference can be traced to upkeep cost including running expenses and repairs, thereby indicating that there is a big opportunity for economizing on motor truck use by establishing the proper kind of a maintenance plan. Here are a few brief points that have an important bearing upon the subject of truck maintenance.

1. Taking care of small troubles before large ones develop, is the keynote of any successful maintenance plan.

2. Systematic inspection, adjustment and lubrication are to be emphatically recommended in the interests of saving expensive replacements during overhaul as well as large repair charges.

3. Unless the driver is a skilled mechanic, forbid him to touch the truck's engine. Owners of several trucks should employ a mechanic either on part time or full time to assume responsibility for running condition of trucks. Nightly inspections, involving minor repairs and adjustments such as tightening of brakes and adjusting spring clips, chains and radius rods, are extremely advisable.

4. Most motor trucks require an overhauling every so often, principally because in this way conditions will be disclosed which, if taken care of immediately, will result in lower future repair costs. An overhauling once a year, or once in twelve thousand miles, is advisable.

5. The truck should be kept clean. Dirt, if allowed to accumulate, may find its way into many of the bearing surfaces, and in some cases may make lubrication difficult or impossible. The result will be increased wear and reduced life of parts.

6. Form the excellent habit of examining oil, water and gas supply before starting a day's run.

Truck maintenance is very largely up to the driver. Therefore a great many operators have found it advisable to keep the drivers well posted on the methods for getting best results from their trucks. A good idea is to prepare a list of important points to be posted in the garage. Or an excellent reminder is to paste such a list in the truck cab where it is always seen by the driver. The following is a list of important suggestions for the driver that may be used in this way:

GIVE YOUR TRUCK A CHANCE

This truck represents an investment of a considerable sum of money. It is entrusted to your care. Honesty and self-respect demand that you give it a chance.

Lubricate it regularly and thoroughly.

Refer to Lubrication Chart daily.

Keep the motor clean.

Do not neglect the valves.

Check them carefully whenever you notice lack of compression. If valves do not seat perfectly you cannot get full power, and there will be an increased consumption of gasoline and probably burnt valves and valve seats.

Do not neglect minor repairs or adjustments.

Carefully examine steering and brake rods daily.

Do not tamper with the governor.

If you do, you cancel the guarantee, and, sooner or later, will get your truck into trouble.

Drain the crank case at least once a week.

It is economy to use high-grade oil.

Do not race your motor.

Never idle your motor unnecessarily.

It results in excessive carbon, trouble and expense.

Draw up all loose bolts.

Never neglect rattle — fix it at once.

This truck should be inspected every thirty days by a competent mechanic.

Travel slowly over rough roads.

DO NOT OVERLOAD

Peep Hole in Dipper

In a recent issue of *Rock Products* an account was published by a former shovel operator employed at the quarry of the Pembroke Limestone Works of Pembroke, Virginia, in which he described how he cut out a space in his dipper door in order to show when his dipper was full.

Although this has been done for many years by quarry men it has served the purpose so well that we are publishing a description thereof in

the hopes that it might offer a valuable suggestion to some of our readers.

When working in rock or stone it is difficult for a shovel runner to know whether he has a dipper full or not, because he cannot usually see from his position at the levers. In order to get away from guesswork this quarry had a slot cut in the dipper door as shown in our accompanying view. This slot was four inches wide between the hinges. It is unnecessary to add that this would not work well in earth, sand or fine material, but undoubtedly fulfills its function splendidly in rock or stone, as it enables the operator to know rather than feel when he has a load.

DEVICES YOU OUGHT · TO KNOW ABOUT ·

The La Plante-Choate Tractor-Trailer

It seems hardly necessary to point out to the readers of *The Excavating Engineer* the tremendous growth since the war in the use of the track-laying or caterpillar tractor. The contractor and engineer are using them more and more and as each season goes by we see an increasing number of cases where tractors are replacing horses on every type of earth moving and construction work. This is an old story to most of us.

How the La Plante-Choate Company stepped into this remarkable development is an interesting story. One day a group of engineers were discussing methods of moving earth, cost keeping and incidentally bidding. The remark was made by one that if he could get a tractor-trailer that could carry from 5 to 6 yards of earth per trailer that would stand the gaff behind a big tractor and that could hook up into trains, cut under sufficiently to make a short turn, ride the fills and carry the load easily, he would have them all licked.

La Plante-Choate trailers being loaded by a Bucyrus 30-B for the Western States Gas & Electric Company's work on the El Dorado Development in California. The tractor seen is a Holt.

This remark was the seed sewn which eventually led the La Plante-Choate Manufacturing Co. to build a 5-yard tractor-trailer.

The La Plante-Choate Manufacturing Co. is well equipped to build this sort of trailer. Their wide experience in building heavy logging trailers and house-moving equipment places them in a position to build such a trailer suitable to carry heavy loads over uneven ground.

The first step in the development of the trailer was the construction of a two-wheel truck and later the four-wheel truck equipped with cottonwood wheels. Although this wheel met with success, they encountered the difficulty of keeping the tires and boxings tight. The idea of the steel wheel with tire and two tank heads was conceived. These steel wheels stood the test and a great many are now being used all over the United States. They are the same indestructible wheels that the La Plante-Choate Company are using on their big tractor-trailers today.

Later, another development was made in the design of a tractor-trailer. When this trailer was designed, the engineers planned a tractor-trailer with a full cut-under which would carry its load on a three-point suspension.

The same sturdy construction that has always been the dominating feature of La Plante-Choate equipment for moving houses and heavy buildings is apparent in the construction of this trailer.

A few of the features that have led to its success follow: The height of the body from the ground is 60 inches, thus making it easily adaptable to elevating grader and steam shovel. The load is carried between the axles and the top of the wheels, thereby maintaining a lower center of gravity which prevents tipping. The broad-faced steel wheels pack and do not rut the road as does a narrow-tired wagon.

The trailer hitch is carried out past the rear wheel line. This extension makes it possible to turn short, without the tongue hitting the rear wheel of the front wagon. This is of vital importance because very often trailers must turn in narrow cramped places. The La Plante-Choate trailer can turn on a 16-foot circle because of the patented full circle swing of the La Plante-Choate fifth-wheel casting.

These trailers pack the fills and it is easier to build them up because they place the load in larger quantities at the points desired. The trailers are dumped while in motion and there is no chance of stalled wagons after dumping — the tractor pulls them right through. You can build up levees, railroad grades and deep fills just as easily with a tractor outfit as you can with a mule outfit.

Further information may be obtained from the La Plante-Choate Manufacturing Co., Cedar Rapids, Iowa.

The Man Who's Afraid

I've paid close heed to the ways of men,
I've observed what the world calls luck,
I have silently marveled, now and then,
At the potent power of pluck;
And this is a bit of truth I hail,
A sentence that's worth one's heed:
The man who is always afraid he'll fail
Doesn't stand much show to succeed!

—*Roy Greene.*

SHOTS FROM THE · FIRING LINE ·

Central States Notes

BY MARK J. WOODHULL, MARK GAYLORD AND W. G. PARROTTE

The Hopkins County Construction Co.'s new 20-B is making quite a name for itself at Madisonville, Kentucky. Mr. Callis, President of the Company, reports that it is capable of considerable more output than he thought possible with a ¾-yard shovel.

The Sterling Construction Co. of Akron, Ohio, has their 18-B on a highway job at Raneage, West Virginia. Mr. G. C. Hanson is doing the operating.

Mr. F. R. Severo of Louisville has a 70-C working on the L. H. & S. L. double-track work at Mystic, Kentucky.

Brown and Floyd of Charleston, West Virginia, are getting along well with their state road work along the Elk River. They thought ten miles of rock looked like too much for their 14-B to get through this summer so bought a 20-B.

Callahan & Walker of Omaha, Nebraska, have moved their Bucyrus 30-B oil shovel from Dundee, Texas, to Buffalo, Wyoming, where they are starting work on a railroad contract of 500,000 yards.

The T. J. Clark Construction Company of Clinton, Iowa, have moved both of their Class-7 Bucyrus draglines to Prophetstown, Illinois, where they have started on a 200,000-yard open-ditch job.

Norton Bros. of Kansas City have finished up their shovel work on the new home of the Kansas City "Blues."

The T. J. Clark Construction Company of Clinton, Iowa, have a 2-yard Morngon idle which they would like to find work for.

The D. J. Ryan Construction Company of Davenport, Iowa, is making good progress on their street work for the city of Moline, Illinois.

F. C. Crane & Company, Briggs & Drew of Omaha, Nebraska, were low bidders on the 2,000,000 yards of drainage work at Sidney, Iowa.

Norton Brothers have finished excavating work for the Kansas City Star building.

W. E. Chambers is at present with the Nichols Contracting Company on the Louisville & Nashville double-track work at Himyar, Kentucky.

Virgil S. Ballenger is still with the States Corporation at Central City, Kentucky, and reports that the 80-B is doing excellent work.

G. W. Burnup is pulling the levers on an Erie shovel for the Land & Coan Company at Holt, Missouri.

J. S. Crow is working for P. T. Clifford & Son at Valparaiso, Indiana, operating an 18-B.

B. B. Murphy is pulling the levers on a 14-B for Brown & Floyd at Charleston, West Virginia.

C. M. Martin is operating a Northwestern machine for A. G. Osman at Missouri Valley, Iowa. C. W. Burgess is operating the other shift.

The Louisville Sewage Situation

An interesting situation has developed in reference to the Louisville Sewerage Controversy.

About a year ago the Commissioners of Sewerage of Louisville asked for bids on its first contract and presented to bidders a form of contract to which Louisville contractors entered many objections. After a series of conferences, most of the provisions were revised to the satisfaction of the contractors and the Commission.

However, among the requests of the contractors to which the Commission did not accede was one for arbitration by a third party on questions of compensation. The contract made the engineer the sole and final judge in all questions and from whose decision there was no appeal. This was objectionable to the contractors, due to the fact that in the past this procedure had led to many complaints and disputes.

The Commission finally embodied in its contract a provision permitting the contractor to appeal to the Commission itself from the decision of the engineer. This did not satisfy the contractors who contended that the Commission is an interested party to the contract and therefore not capable of rendering an impartial decision.

After an experience of eight or ten months, most of the contractors engaged on that work met as a body with the Commission and presented evidence to show that they were not getting the proper co-operation from the engineers nor an equitable enforcement of the contract. It was specifically stated that the meeting was not held for the purpose of asking redress on any of the individual complaints brought out in discussion. The contractors, however, renewed their request for impartial arbitration, alleging that the manner in which the engineers administer their work entails a very high charge to the Commission resulting in much higher costs to the public than similar work cost in other cities and much greater than similar sewers were costing the Board of Public Works at Louisville, another branch of the City Government.

The Commission subsequently replied to the contractors in a letter which took up individually each complaint made and denied each by a quotation from the specifications.

Shortly thereafter the Commission invited bids on three contracts but no bids were received from Louisville contractors. In order to clarify their position before the public, the contractors inserted two paid advertisements in the local press covering one-half page each in which they allege that the contractor is not treated fairly, that the cost of work is thereby greatly increased which is a hardship on the public, that the designing of the Commission's engineer is extravagant, resulting in further loss to the public and asking that one of the newspapers employ an engineer at the contractors' expense to verify the truth of their statements. The contractors also stated that every contract of the Commission had been executed at a loss to the contractor in spite of his high unit prices.

In its reply the Commission said that its attorney doubted the legality of arbitration and added, "as far as we are concerned we certainly would not delegate our responsibility at the dictation of men who, by their own admission, have not completely managed their own affairs." To this the contractors have invited the Commission to join them in a friendly suit to have this point decided by the courts but the Commission has not accepted this suggestion.

News from Detroit

BY J. J. GAULT

J. T. Poupore, Contractor, of Detroit, Michigan, recently purchased a 20-B Bucyrus ¾-yard dragline and has just completed the excavation of a large sewer on Waterloo Street in Detroit. This sewer was excavated in filled ground, and some difficult excavating was met with in the work. This was due to the fact that a large amount of refuse, old timber and concrete foundations were encountered. Mr. Poupore had no difficulty, however, in moving this material, and as advised by the City Inspector made better progress on this sewer than has been attained in similar work in the city. Having completed this job, Mr. Poupore is at present filling a sewer in Oakwood, where he expects to be busy for some time.

Albert Tobin, General Contractor, Detroit, Michigan, is getting under way on his Ashland Avenue sewer project in Detroit. This project is about 5,723 feet of 13 feet 3 inches reinforced concrete sewer. His average depth of excavation will run approximately 27 feet. Mr. Tobin has opened his work in two sections. On Section No. 1 he has a Class-14 Bucyrus dragline excavating the

main sewer, with a ¾-yard Erie shovel, operated by Hector De Nolf, which is stripping ahead of the dragline, and a No. 2 McMyler crane with clamshell bucket for back filling. On Section No. 2 of this work he has a No. 4 McMyler crane equipped as a dragline and a No. 2 McMyler crane with clamshell attachment for back filling. On the Class-14 dragline, Al Duesing is operating with Jim Duffy as fireman. On the No. 4 crane, Nick Maranich is operator with Mr. Scotty as fireman. On the two smaller cranes Mr. Cody and Mr. Barron are operators. Mr. Tobin expects to have this work well under way in a short while, and from his present line-up, all indications are in his favor.

Messrs. Davis & Bentley, Detroit, Michigan, have recently purchased a Bucyrus 20-B dragline and will have this machine in operation on the Ashland Avenue sewer project now being done in Detroit, on which Mr. Albert Tobin is general contractor. The Messrs. Davis & Bentley have been awarded a piece of this work from Mr. Tobin.

New York and Vicinity

BY H. E. HEIDRICH AND THOS. A. BURNS

Gallagher & Cozine of Paterson, New Jersey, are grading some property on Broadway Hill, Paterson, New Jersey. They are using their Osgood 18. Robert Adams is operating and Dick Madden is firing.

Wm. A. Parkhurst, Houston Street, Newark, New Jersey, is grading a piece of land in Verona, New Jersey, which will be known as Civic Center. The new high school has already been erected, together with the public library building. The city hall building will be started in the future. Mr. Parkhurst is using his Keystone grader on the work.

Sherman & Rhodes of Smyrna, Delaware, have contract for about 3¾ miles of concrete road through Smyrna. They are using Western Wheeled Scrapers and Fordson Tractors for the light grading and a Bucyrus 20-B revolving shovel for the heavier work. Messrs. Sherman & Rhodes are personally supervising the work.

Peter Staub of Pitman, New Jersey, has contract for concrete road through Odessa, Delaware, about 2½ miles. The grading work has been sublet to Craig & Mulford of Cedarville, New Jersey, who are using a Keystone grader.

Sherman & Rhodes have the contract for borrow and fill just below Odessa, Delaware, consisting of about 60,000 yards connecting present job of Peter Staub's with finished state road, known as the DuPont Boulevard. They will use a 20-B Bucyrus and narrow gauge equipment, consisting of two dinkies and about twenty small dump cars. To put in this connecting link it is necessary to fill in part of a swamp, the idea being to eliminate a very sharp curve on the outskirts of Odessa. The haul will be about 700 feet.

Bentley & Morison of Elizabeth, New Jersey, have contract for putting in railroad siding and extending it back to a sand and gravel pit, at Millville, New Jersey, a distance of about four miles, involving about 30,000 yards of excavation. They are using Stryker & Stryker's 20-B Bucyrus revolving shovel. T. C. White is superintending the job. Ray DeGraw is handling the levers and Jack Riddell is furnishing the steam.

Ulric B. Walmsley, the London Advertising man, recently interviewed by the New York World, wanted to know where we raised our cattle and why we do not smoke more pipes, etc. If goats is what he had in mind, someone should have taken him over to East New York Avenue in Brooklyn or anywhere in the Bronx.

But more interesting to us was his desire to know why we plaster poorly painted billboards all over town. What do you suppose he would have said if he saw the many blue, green and yellow steam shovels desecrating the landscape?

Jimmy McGuinnis, writing in the New York Sun, wants to know why we haven't a contractor poet in New York, and he suggests that someone write "the lay of the brick" — Home James home, keep out of our ball lot!

Speaking of brother columnists its a mighty good thing for International relations that F. P. A. writing under "The Conning Tower" regarding "His Honor's" jubilee celebration that that writer was not baptized Albert, Aaron or even Aloysius.

Of "senile decay" steam shovels, and, one machine operators.

We have been asked to find out more about the following ad by a "pusher" living on Madison Street East, New York:

Attractive widow with plenty for two wishes acquaintance honorable man; postage; object mat. Box 1156, Milwaukee, Wis. — The Home Friend.

Before answering this, most of us want to know just what it is she has plenty of for two. Maybe it's only attractiveness.

Northwestern States News

BY A. B. HANCE, PORTLAND, OREGON

The Idaho State Bureau of Highways has awarded a contract for 6.78 miles of paving on the Yellowstone Park Highway in Bingham County. This is the first paving job of the year undertaken by the State and it was awarded to J. C. McGuire of Pocatello for $211,787.27. The road is to be bituminous concrete on a gravel base and is a Federal Aid project.

National forest highway funds totaling $367,250 have been allotted for the construction of 110 miles of road in Oregon by Secretary of Agriculture Wallace. Included in this allotment is about 10 miles of the Mount Hood Loop Highway which is to be surfaced at a cost of $75,000. In all cases, local and state authorities will bear a share of the cost of the road-building, nearly all of the projects forming important links of the state and county highway system.

Bids were opened May 1st by the State Highway Commission at Olympia, Wyoming, for 4.85 miles of grading, draining and concrete paving, for 15.67 miles of clearing, grading and draining, and 4.23 miles of clearing, grading and gravel surfacing. Bids were also opened for the construction of one steel bridge with approach, and for one concrete bridge. The bids in all cases were awarded to the low bidder.

Contracts for sewer and water system installations in Longview have been awarded as follows: Bardsen & Co. of Butte, Montana, installation of the sanitary sewer system involving 45,000 cubic yards of excavation and laying of 50,000 lineal feet of sewer pipe; J. D. Hanley of Portland obtained the contract for the storm sewer installation, involving 26,000 cubic yards of excavation and laying 39,000 lineal feet of pipe; James Payne, who is installing the sewer and water systems in the industrial area of Longview, obtained the contract for the water system installation, which involves 13,000 cubic yards of excavation and laying of 56,000 lineal feet of pipe. The contracts total more than $200,000. The Long-Bell Company supplies all the materials.

The Oregon Bureau of Roads opened bids on the 24th of last month for three road projects as follows: Alsea Project, Section 10, widening, was awarded to K. L. Hall of Eugene whose bid was $9,021, and he also was the low bidder on the Alsea Project, Section 7, for grading, his bid in this instance was $39,619 for concrete culverts and $32,708 for log culverts; Blewett Pass Project, Section 5, which consisted of 7700 cubic yards of rock excavation and 13,300 cubic yards of common excavation, surfacing, concrete pipe, and reinforced steel bridges, has not yet been awarded.

The State Highway Commission on May 28th opened bids for the following road work: The Paisley Section of the Prineville-Lakeview Highway in Lake

County, 9.94 miles of grading and 10.43 miles of crushed rock surfacing, H. J. Hildevurn, of Grant's Pass, Oregon was the low bidder, his bid being $54,354.50; Lower Bridge Market Road, Tumalo-Cline Falls Highway, 8.45 miles of grading, was awarded to R. H. Bailey, Tumalo, Oregon, who was the low bidder; Columbia River Highway in Clatsop and Columbia Counties, buildings at Bradley Park and Little Jack Falls was awarded to Clifford Burgess of Astoria, Oregon, whose bid was $7,456.95; Lewis & Clark Bridge approaches on Roosevelt Coast Highway, 1300 lineal feet of bulkhead and embankment construction was awarded to H. Makela, Astoria, Oregon; Sheridan-Belleview Section of McMinnville-Tillamook County, 0.14 miles of reinforced concrete pavement was awarded to A. T. Dolan of Tillamook, Oregon; Hilgard-LaGrande Section of Old Oregon Trail in Union County, Oro Dell overcrossing, was awarded to the Illinois Bridge Company.

Pacific Coast News

BY P. H. BIRCKHEAD

The Cajon Line Products Co. are planning the construction of a plant to develop lime deposits near Camp Cajon, 20 miles north from San Bernardino, initial expenditure to be $200,000.00.

Contract has been awarded to C. R. Hill, Reno, Nevada, who bid $153,400.00 for the construction of the Bridgeport Dam for the Walker River Irrigation District, Yerington, Nevada.

Contract has been awarded to W. A. Bechtel, 625 Market Street, San Francisco, for the construction of two miles of levee south of Stockton for the Western Pacific Railway Co., Mills Building, San Francisco. Work involves approximately 175,000 cubic yards. Plans for work prepared by Engineering Department, Western Pacific Railway Co., Mills Building, San Francisco.

Contract has been awarded to Utah Construction Co., Phelan Building, San Francisco, for the excavation for 12 miles of second track from Mojave, Kern County, to Camerson, Kern County, work involving 85,000 cubic yards of excavation.

Plans are being made and bids will be called for shortly by City of Huntington Beach, Orange County, for the construction of two miles of boulevard along Ocean Avenue, to be known as Ocean Boulevard, 1 mile to be 80-foot width paving, balance 20-foot width. Bonds voted in amount of $300,000 for this work have been sold.

Plans are being completed by California Highway Commission, 515 Forum Building, Sacramento, for construction of 16½ miles of highway into Yosemite Valley from Briceberg to El Portal, Mariposa County, estimated cost $600,000.00.

R. C. Starrett, former Field Engineer, has been appointed Chief Engineer of the Merced Irrigation District to succeed R. C. Starr, deceased. A consulting engineer for the District will also be appointed shortly.

A tentative investigation has been made by Consulting Engineer W. L. Huber, First National Bank Building, San Francisco, to determine the feasability of appropriating water from Lopez Creek to furnish an auxiliary water supply for the City of San Luis Obispo of about 1,000,000 gallons per day. An application will probably be made to the State Division of Water Rights shortly for permission to divert the waters of the Creek, and surveys will probably be started in the near future for the pipe line and storage dams. Estimated cost over $400,000.00.

Contract has been awarded to the Griffith Co., Los Angeles Railway Building, Los Angeles, who bid $105,000 for the construction of Linden Avenue storm sewer.

J. E. O'Mara, engineer, and H. Osborne, fireman, are manning a 30-B Bucyrus for C. H. Hudson at Santa Maria, California.

William Boone, engineer, and L. Duggard, fireman, are operating a 20-B Bucyrus within the city limits of Los Angeles for Chas. G. Willis & Son.

Dave Colwes is running a 20-B Bucyrus shovel for W. H. Hauser, San Francisco. Irving Martin is fireman on the same machine. There is also an Osgood 18 on Mr. Hauser's work which he is running himself with J. Agnew as fireman.

J. D. Shilling

J. D. Shilling, Sr., General Superintendent of the Mines of the Utah Copper Company, Bingham Canon, Utah, died at his home in Bingham on May 27th as a result of heart failure, at the age of 68 years.

Mr. Shilling was a veteran in mining activities, with which he had been identified since he was 15 years of age. He was born in Zainingem, Wuertemberg, Germany, December 30, 1854. In 1869 he came to the United States and at once procured employment in a coal mine. Being a diligent and faithful workman, he was rapidly advanced until he had been promoted through various departments and made superintendent of the McCardy Coal Company at Churchill, Ohio. He held this position for two years and was put in charge of the limestone quarries belonging to the Briar Hill Iron and Coal Company in western Pennsylvania, which position he held until 1885. From 1885 to 1887 he was superintendent of the Henroid Iron Furnaces at Youngstown, Ohio. From 1887 to 1895 he was superintendent of limestone quarries for the Bessemer Limestone Company in western Pennsylvania.

Mr. Shilling was then made superintendent of the Biwabic Mining Company on the Mesabi Iron Range at Biwabic, Minnesota, in charge of all steam shovel work in that company's iron mines. While holding this position he also was general manager of the Swansea Iron Mine in Michigan, an underground proposition, and had general charge of the Shores mine in Wisconsin, belonging to the Bewabic Mining Company.

From 1902 to 1905 Mr. Shilling was general superintendent of the Cornwall Ore Banks Company at Cornwall, Pennsylvania, in charge of that corporation's iron mine, from which the ore was mined with steam shovels.

In 1906 Mr. Shilling was appointed superintendent of mines for the Utah Copper Company, which position he held until 1919, when he was promoted to the general superintendency of the company, the position he held at the time of his death.

Mr. Shilling is survived by his widow and two sons, J. D. Shilling, Jr., Superintendent of the Mines of the Utah Copper Company and Roy Shilling, General Track Foreman for the Company.

Southern States News

BY C. N. BALLENTINE, W. W. WHORLEY, L. E. MAC DONALD AND H. E. GREEN

Bids were opened at Eudora, Arkansas, on May 15th, on several million yards of drainage work in the Eudora Western District. R. H. McWilliams Company, Memphis, Tennessee, was awarded contract for this work.

M. O. Burns, who is loading coal with a 30-B for the Manchester Mining Company, Manchester, Alabama, called on us recently.

H. R. Jones is moving slag for the Birmingham Slag Company with a 95-ton Bucyrus.

J. A. Schaefer Construction Company, St. Louis, Missouri, has subcontract of the W. E. Callahan Construction Company for some levee work near Greenville, Mississippi, on which they will use a ¾-yard traction Type B Erie Shovel. Mr. L. H. Ruple is operator and James Hopkins is fireman. Mr. M. Widmer has charge of the work.

W. J. Dowdle is operating a Marion 37 Electric with a Phoenix Portland Cement Company at Boyles, Alabama. Frank Holman is running and Jesse Smith firing a 35-B for the Sloss-Sheffield Steel & Iron Company at Russellville, Alabama.

The following is a list of people working on different machines for the Sloss-Sheffield Steel & Iron Company: Paul Fisher is operating, Will Dennis craning, and Harry Taylor firing a Vulcan Little Giant; Little Giant 1027 is manned by the following crew — B. F. Fisher, runner, Bob Pruitt, cranesman and Will Bendoll, fireman; Little Giant 1707 is operated by A. Logan, runner, Will Hunt, cranesman, and Ernest Jones, fireman; John Thornton is running Little Giant 1613, Ernest Cox is craning, and Kenny Edwards firing; G. R. Rogers is operating and Willis Floyd firing an 18-B; Pat Hickey is handling levers on an 18-B and Bob Lowe firing; I. T. Stricklin is operating, Luther Byrd, craning and Melvin Thornton, firing, Vulcan Little Giant No. 810.

Mr. W. J. Porter is superintendent in general charge of operations in the Russellville District for the Sloss-Sheffield Steel & Iron Co. He is ably assisted by Mr. Carter, assistant superintendent, and Mr. Art. McKinney, master mechanic.

Mr. W. A. Taylor reports satisfactory progress on his section of the Montgomery Highway near Siluria, Alabama. Mr. Taylor is a son of Mr. W. T. Taylor of the W. T. Taylor Construction Company, Wilsonville, Alabama, one of the oldest and most successful contracting firms in this District.

Eastman-Gardiner & Company, Laurel, Mississippi, are going to build fifteen miles of main line logging roads near Cohay, Mississippi. Robert Carr, general superintendent of logging operations, will have charge of this work.

C. H. Crowell

We have just learned with much regret of the death of Mr. C. H. Crowell, a well-known dragline operator. During the past two years Mr. Crowell has been with the United States Government and with Roach & Stansell, as operator of their draglines.

At the time of his death he was with Smith Brothers in Jonesville, Louisiana. On the morning of February 6th he and four others were on their way from camp to Jonesville in a motor boat. When about five miles down Ouachita River the boat caught fire and every one but Mr. Crowell jumped. He, however, tried to paddle the boat to the bank but was unable to make headway alone. He held on to the edge of the boat until he was overcome by cramps from the cold water and was drowned.

He is survived by his wife, daughter and two sons who live in Bellaire which is a suburb of Houston, Tex.

Wisconsin

Lee Hanson is operating a Bucyrus 20-B for C. F. Wussow, Milwaukee.

R. B. Stevenson is running a 65-ton Bucyrus for the Wilcox Company at Fontana, Wisconsin.

Fred Showers is operating a Bucyrus 18-B for the Consumers Company at Beloit, Wisconsin.

Canada

Vancouver Notes

BY J. C. MOON

B. D. Griffin & Co., of Vancouver, have been awarded a contract by the Provincial Minister of Public Works to complete twelve miles of road from Windermere south on the Columbia River Road to link up with the Banff-Windermere Road. The contract has been placed on a unit basis, the work to be completed at a total cost of $48,000.

The contract for slightly over two miles of bitulithic paving in the Chilliwack District has been let to the Columbia Bitulithic Paving Company, of Vancouver, at the figure of $50,000, subject to approval of the Chilliwack Municipal Council, it was announced at the Department of Public Works. The contract for the construction of four and one-half miles of the Vernon-Edgeworth Road has been awarded to Rawlings & Labrash, the lowest bidders. The contract price is $58,000.

Work has started on the construction of a $250,000 hydro-electric plant for the East Kootenay Power Co. at Elko, British Columbia. The dam and power house are being built by the company and Winston Bros. Co., Elko, will construct a tunnel.

Esquimalt & Nanaimo Railway machine shops at North Wellington, with two locomotives, have been destroyed by fire, with loss estimated at $80,000.

The Vancouver Harbor Commissioners have let a contract to the Pacific Construction Co., for the foundation of extension to No. 1 elevator. The contract for the superstructure will be let shortly. W. D. Harvie, secretary.

Montreal and Vicinity

BY J. M. WARD

Operations on the big power development on the Grand Decharge, by the Quebec Development Company, have not as yet assumed very great proportions, due to the fact that they have been held up with their line of railway, which prevented them from getting in their heavy equipment. There are a couple of small mixers at work laying the foundations for the big machines. There is also a Model 21 Marion shovel digging out a clay cut and making a fill.

H. Bingley is running this Model 21 machine and A. Melanson is firing.

At the railway siding at Hebertville there is a Marion 61 and a Marion 37 dragline as well as two 70-ton Bucyrus type shovels awaiting to go on this job.

It is expected that when equipment is on the ground and operations in full swing that there will be between three and four thousand men employed.

Not very far up the river at Kenogami, Messrs. Price Bros. & Company, Limited, are doubling their pulp mill capacity. On this job they are working a 20-B Bucyrus shovel in charge of A. Duchemin, foreman, with Michel Lavoi running the shovel and Louis Boily craning and Emile Lavoi firing. Michel Lavoi is very enthusiastic about this 20-B shovel.

Further north we find, up near Chicoutimi, at Portage des Roches, the Roberval & Saguenay Railway operating an old Vulcan type shovel in a gravel pit loading Western Dump Cars which are hauled, about two or three miles, for the concrete work on the Kenogami Dam. The main dam of this Kenogami work is being built by the Nova Scotia Construction Company and Gorman & Peckham.

Messrs. Newton-Dakin Construction Company of Sherbrooke have been awarded a twenty-mile gravel highway contract for Quebec Provincial Government, from St. Johns, Quebec, to Rouses Point.

Winnipeg and Vicinity

BY F. X. AMOSS

Present indications show that the crop conditions, generally, throughout the Prairie Provinces are very satisfactory. An abundance of moisture is almost universal. Ninety-five per cent of all coarse grains are seeded and there is a large increase in acreage in clover, alfalfa and fodder corn. Damage from floods and cloudbursts has been slighter than expected. Coarse grain acreages show little change from those of 1922.

The Legislative Assembly of Saskatchewan approved at their last session a total of over $2,000,000 to be expended upon public improvements, viz: roads, bridges and ferries.

Mr. Geo. W. Craig, for the past ten years City Engineer of Calgary, Alberta, has resigned to accept an appointment as District Manager of the Asphalt Association in Chicago.

Mr. T. Lees has been appointed District Engineer of the Canadian Pacific Railway at Calgary, Alberta.

The Canada Stoneite Corporation, Limited, has started a factory at 513 Martin Avenue, Winnipeg, under the supervision of Edward Dubois, the well-known interior decorator of Smith Street, Winnipeg. The Company will make brick, imitation marble, floor tile, tombstones and all kinds of marble decoration, by a patented process invented by Mr. J. K. Johnson.

Toronto and Vicinity

BY C. E. ENGLAND AND N. DE WIND

The John E. Russell Construction Co. of Toronto have sublet the excavation work for several miles of sewers at St. Lambert, Quebec, to Angstrom & Verrochio, of Toronto, who have moved out one of their steam shovels on to the job.

The Nipissing Central Railway Co. received bids on June 12th at Toronto for the grading, ballasting, and fencing of 25 miles, extending from Swastika on the Timiskaming & Northern Ontario Railroad, into the Larder Lake District. This branch will open up one of the new mining sections of Northern Ontario. Mr. S. B. Clement, North Bay, is the Chief Engineer.

The Dominion Construction Co., Ltd., of Toronto, were awarded a contract by the Michigan Central Railroad for construction work at St. Thomas, Ontario, estimated to cost $500,000.00. This will be principally yard extension, and approximately 3 miles of new track will be laid.

It has been announced by the Mayor, Mr. C. R. Newman, that the Niagara Falls, St. Catharines, and Toronto Electric Railway will immediately start in on a program of improvements involving an expenditure of $1,000,000.00, and it is understood that orders for new steel work amounting to approximately $30,000.00 have already been placed.

The principal event of interest to excavating and earth moving contractors during this month was the meeting of the Canadian Good Roads Association, held at Hamilton, June 11th to 14th, inclusive. A very representative assembly of engineers and contractors from the various provinces registered, and a number of visitors from the United States also attended. One of the most interesting of the latter was Mr. Benedict, of the Illinois State Highway Commission, who, in the unavoidable absence of Mr. Clifford Older, their Chief Engineer, gave a most interesting decsription of Bates' Test Road, illustrated by screen pictures, of the construction and destruction of the various samples tested, of that most remarkable road research work. The presiding officer at that section, the Hon. J. L. Peron, Minister of Roads for the Province of Quebec called for a standing vote of thanks to Mr. Benedict as a special mark of appreciation. Another vital subject was dealt with by the Hon. E. H. Armstrong, the Premier of Nova Scotia, in a paper entitled "Who Should Pay for the Roads?", and in view of the fact that Canadian Government contemplates the discontinuance of the federal subsidy to the various provinces has brought up the question of re-distribution of the financial load.

TRADE NOTES

Bucyrus Company Opens Philadelphia Office

The Bucyrus Company announces the opening of an office at Philadelphia, Room 1507 Finance Building.

This office will be under the supervision of Mr. E. G. Lewis, Eastern Sales Manager, and Mr. T. A. Burns will be in charge locally.

Pennsylvania Road to Spend $2,000,000 on Betterments

A program of improvements, estimated to cost $2,000,000, was announced yesterday by the Pennsylvania Railroad for its Northwestern region, the largest single item being the elevation of tracks near the 59th Street yards, to cost $616,221. Other items include the deepening of the slip at the Sandusky, Ohio, coal docks; extension of tracks from Webbs to Walbridge, Ohio, and the installation of a block system from Grand Rapids to Mackinaw City, Michigan, including Muskegon, Traverse City, and Harbor Springs, Michigan.

Bucyrus Company Announces Change in Personnel of Sales Department

The Bucyrus Company, South Milwaukee, Wisconsin, announces the appointment of Mr. E. J. Wilkie as Northern Sales Manager to succeed Mr. E. R. Weber, resigned. Mr. Wilkie will have general charge of the sale of Bucyrus products in Wisconsin, Minnesota, North and South Dakota, Upper Peninsula of Michigan and Eastern Montana, with headquarters in South Milwaukee, Wis.

REVIEW OF BOOKS and CATALOGS

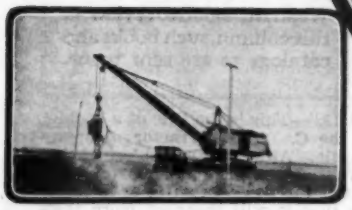
We shall be glad to review, in this column, such books and catalogs as are sent to us.

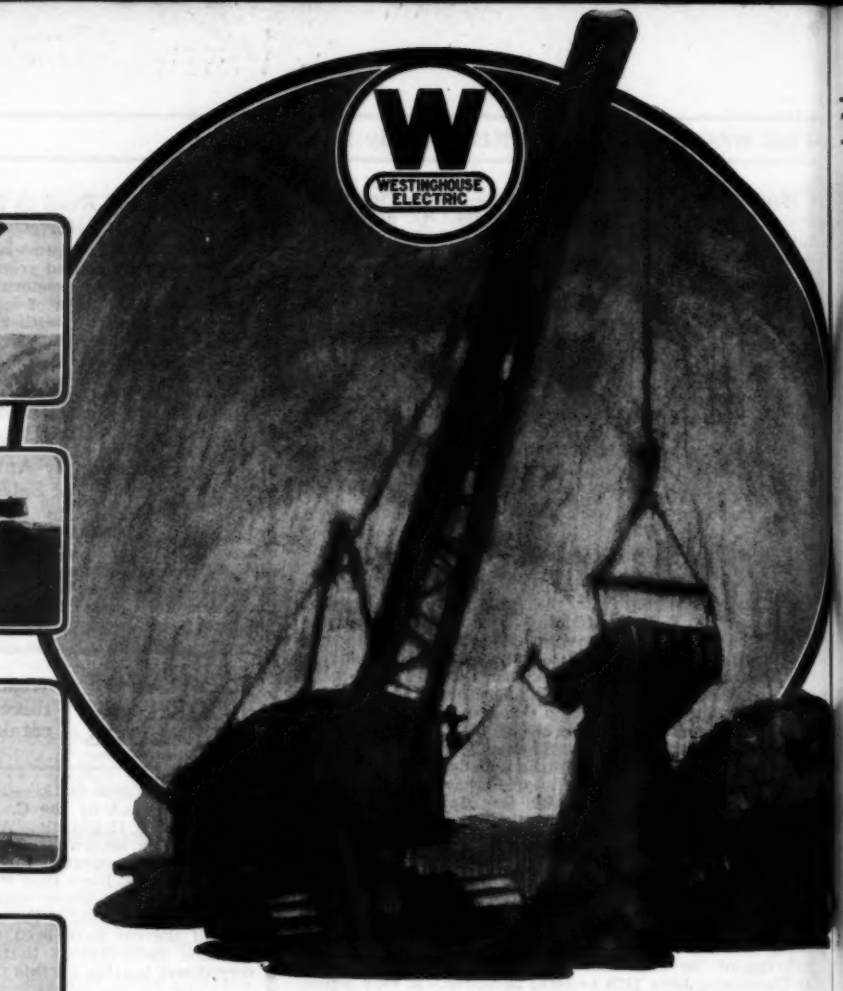
"SUBBING THE SOIL"—This is the title of a booklet recently published by the C. L. Best Tractor Company of San Leandro, California. Although the subject of this booklet sounds somewhat out of the line of the contractor and the excavator, the subject matter is so interesting that we believe that it will prove of more than ordinary interest to those who are only indirectly interested in the cultivation of the soil; moreover, the methods described therein have been so successfully applied to excavation undertakings that much found therein has a very direct bearing on this field.

Subsoiling or deep-tillage of the soil is something that is little known outside of the state of California. The tremendous advantages derived from breaking up what is called the undercrust or plow-pan has aroused a keen interest in the subject. This booklet has been prepared by the C. L. Best Tractor Company from an accumulation of data that has been secured from various sources. The subject is treated broadly, clearly and without bias.

Incidentally it may interest the builder of roads that the subsoiling tool pulled by a powerful tractor has in some instances replaced the ordinary road plow and the scarifier on road-grading jobs and large construction projects with many striking advantages. In building the stadium at the University of California, five standard chisel plows were used behind Best "Sixties" to break up the ground so that it might be readily picked up by wheel scrapers. In fact one "Sixty" with a fine-point "Subber" behind it, usually kept six wheel-scrapers occupied. Again on the Merced Irrigation Project the multiple standard "Subber" was similarly used to loosen material in the bottom of the canal so they could be removed by four-horse scrapers. In this instance three "Sixties" would keep 120 mules busy. There is no question but what this application can be extended to other fields of excavation.

We believe that many of our readers will find exceedingly interesting reading in this well-prepared booklet which may be obtained directly from the *C. L. Best Tractor Company of San Leandro, California* or by writing *The Excavating Engineer.*





Under Test

On the Laramie Project of the United States Reclamation Service, near Mitchell, Nebraska, Westinghouse motors were put to a most severe test.

Working on a test run, a Westinghouse motor-driven Bucyrus Class 9½ Dragline, with 1½ cu. yd. bucket, made an average of 800 cu. yds. per eight-hour shift, digging hard Brule clay.

Motor drive of the utmost reliability contributed to the making of this enviable record. Westinghouse excavator motors are especially built for this severe service. They are rugged, efficient, and operate with very low maintenance cost.

In the excavator field, as in many others, motor drive is fast coming to the front. It gives year-round reliability, as there is no danger of shut-down due to frozen water pipes. Output increases as no haulage facilities are required to supply coal.

Consult Westinghouse engineers about your material handling problems.

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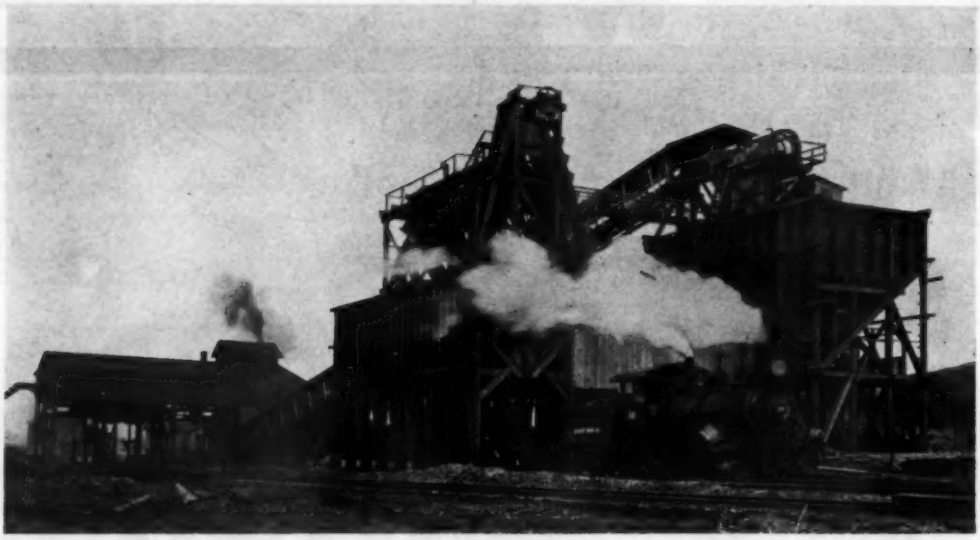

Washer and Coal Tipple where the Coal Is Screened and the 3 x 6-inch Egg and 6-inch Lump Coal Is Loaded Directly into the Cars

Bucyrus 225-B Equipped with an 85-foot Boom and a 6-cubic-yard Dipper, Stripping Near the Outcrop

Views of the Sunlight Mining Company's Coal-Stripping Operations Near Madisonville, Kentucky